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Species

Catenomycopsis vinayaka sp. nov. from Vinayak stream of Nainital, Kumaun Himalaya, India

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ABSTRACT

Catenomycopsis vinayaka sp. nov., isolated as root endophyte from a high-altitude riparian plant grown in Vinayak, Nainital, Kumaun Himalaya, India, is illustrated and described. It differs from the previously known monotypic species of the genus *Catenomycopsis* having its bigger and hyaline conidia with no pigment in MEA culture. The detail morphological features and cultural characters are provided here under.

Keywords: Aquatic Hyphomycetes, sp. nov. , *Catenomycopsis,* new root endophyte.

1. INTRODUCTION

During the course of investigations on aquatic hyphomycetes of high altitude Kumaun Himalayan streams the authors have also collected several samples of riparian plant roots for the isolation of root endophytic fungi from Nainital, Kumaun Himalaya (Pant, et al. 2019 a, b; Sati et al., 2009). One isolate which was recovered from the roots of *Eupatorium adenophyllum* growing in the Vinayak locality of Nainital appears to be an undescribed fungus, as it produces *Cladosporium* and *Ramularia* like conidia but differs in many other characters and seems to be very close to *Catenomycopsis*.

The genus *Catenomycopsis* O. Constantinescu belongs to Hyphomycetes mainly characterized by having hyaline conidiophores and branched conidial chains (Tibell and Constantinescu, 1991). *C. rosea* the monotypic species known so far is characterized by holoblastic, unicellular, and colourless smooth thick walled conidia. It is an anamorph of *Chaenothecopsis haematopus* Tibell (Tibell, 1984).

The intensive study of this isolate puts it to be member of *Catenomycopsis* as suggested by Prof. L. Marvanova, Czechoslovakia when it was sent for her comments. Later when it was sent to Dr. P. Fiuza, Brazil, she also agreed it to be a new species on the basis of its unique characters. It was further maintained in MEA and taxonomic details were recorded. It is now therefore being described it as a new species of *Catenomycopsis* here under.

2. MATERIAL AND METHODS

Roots of *Eupatorium adenophyllum* are collected from a high altitude stream Vinayak stream of Nainital Kumaun Himalaya, Uttarakhand, India. Fresh and healthy roots were brought to the laboratory. Root samples were thoroughly washed with running tap water for 2–4 hrs to remove adhering soil particles etc, then dipped in 2% sodium hypochlorite solution for 1–2 min for surface sterilization and finally rinsed with sterile water (5–7 min). These root samples were then cut into small pieces (1–2 cm long) and placed into Petri dishes containing 20 mL of sterile water.

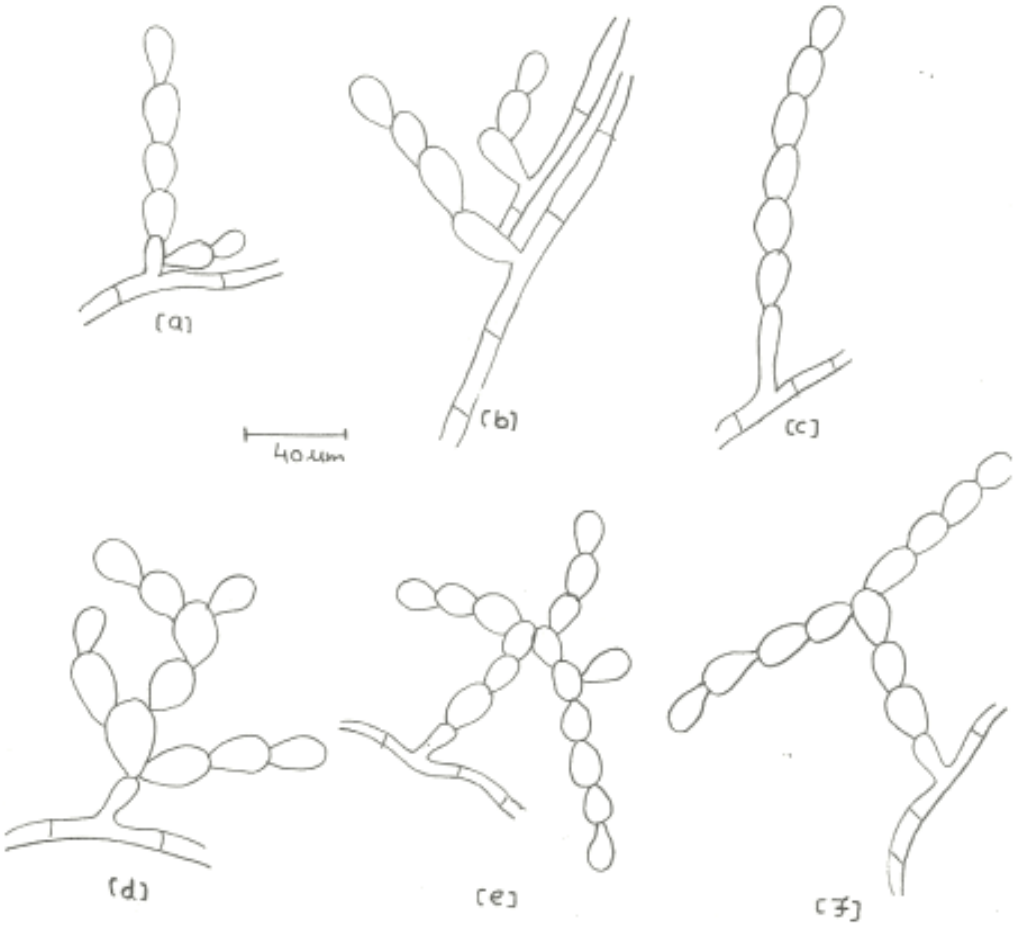

Figure 1 *Catenomycopsis vinayaka* a-c: Conidiogenesis; d-f: Conidial branching and conidia in chain

The root segments kept in Petri dishes were incubated at 20 ± 2 °C for 5–7 days and examined regularly. Observations were made using compound microscope under low power to confirm mycelial growth and conidia while placing agar block (5 mm dia.) into sterilized water for sporulation. Floating conidia were picked up by a sterile needle and studied further by making semi-permanent slides. Pure cultures were initiated by transferring conidia onto 2% malt extract agar (MEA). Germinated conidia were maintained on MEA slants at 4°C following Sati and Belwal (2005).

3. RESULTS

Taxonomic description

Catenomycopsis vinayaka sp. nov. (Figure 1, Plate 1)

Colony fast growing on 2% MEA, at first hyaline later appearing whitish in colour. Mycelium partly submerged and partly aerial, branched, septate, hyaline, size 5-10 µm. Conidiophores simple and short. Conidial cells are oval to barrel shaped, hyaline formed by budding in acropetalous manner, in a chain of 3-7 cells, measuring 19.5-27.3×11.7-19.5 µm in size. Occasionally conidia branched and form characteristic chain of cells.

Etymology

Named after the locality Vinayak, Nainital Kumaun Himalaya from where it was first isolated.

Habitat

The present isolate isolated from healthy roots of *Eupatorium adenophyllum* as an endophyte in the riparian locality of Vinayak, (1500 m asl), Nainital (India). Slide specimen and cultures from the holotype have been deposited in the Department of Botany, Kumaun University, Nainital, India (Holotype - KUMS 305).

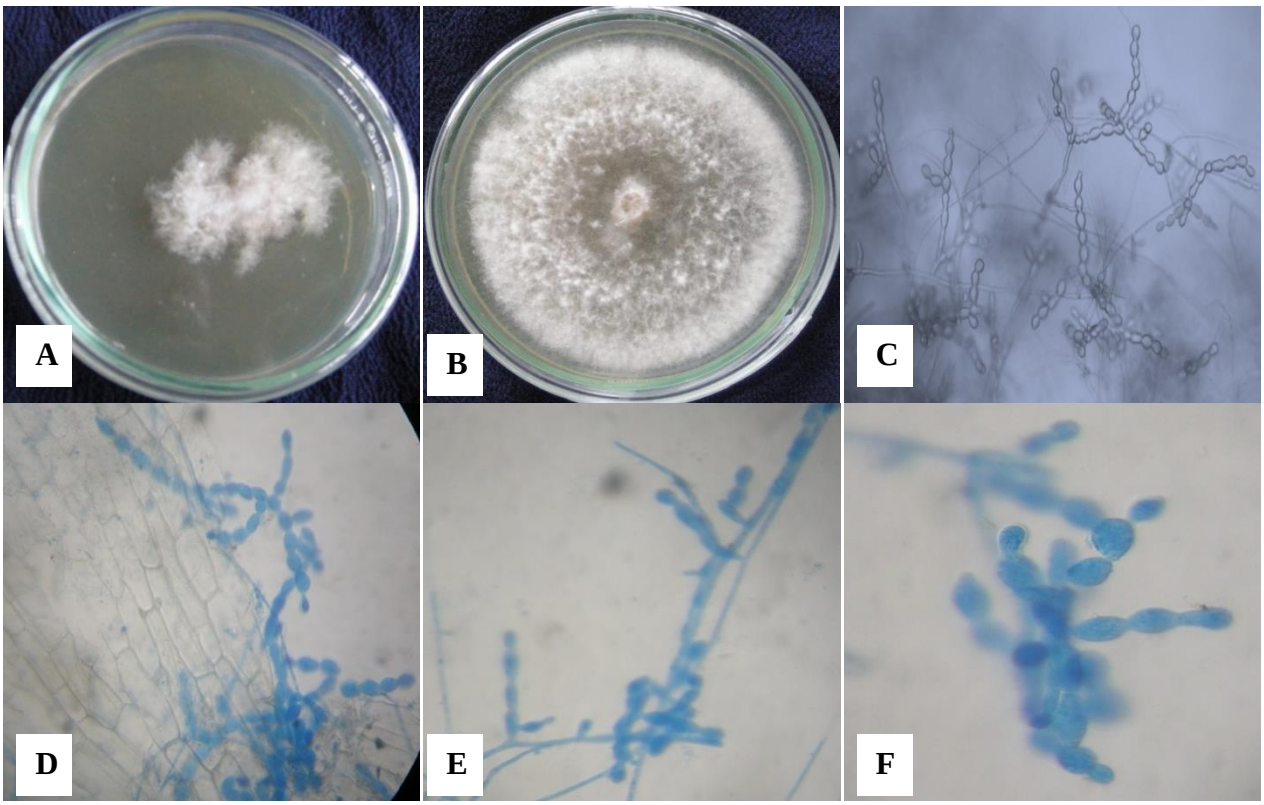

Plate 1 *Catenomycopsis vinayaka*., A & B- Pure culture on MEA; C & D- Conidial chains on host tissue; E- Conidiogenesis; F- Released conidia of *C. vinayaka* in water

4. DISCUSSION

The genus *Catenomycopsis* was first described by O. Constantinescu as an anamorph of *Chaenothecopsis haematopus* (Tibell and Constantinescu, 1991). It is mainly characterized by having branched conidial chains. *C. rosea* is the type species of this genus with holoblastic, unicellular, colourless conidia with smooth thick wall, produced acropetally on the conidiophore.

The present species is isolated as a root endophyte from the roots of *E. adenophyllum* shows very fast growth in MEA and sporulation in submerged conditions (Plate 1). It appears to be very close to *Catenomycopsis rosea* on the basis of its conidiogenesis and conidial shape. However the conidia of present isolate are slightly bigger than *C. rosea* (19.5-27.3×11.7-19.5µm).

The culture of the present isolate also differs in having hyaline to whitish in colour but never become dark in colour whereas in *C. rosea* it is reddish yellow to pale pink. In old cultures of present isolate occasionally zonation/rings are also formed (Plate 1) but such zonation does not form in *C. rosea*.

Considering the unique features the details of this isolate were sent to Prof. L. Marvanova, Czechoslovakia who suggested that it may be an undescribed species of *Catenomycopsis*. Simultaneously, when the taxonomic characters of present isolate were sent to Dr. P. Fiuza, Brazil for her opinion, she also agreed it to be a new species of *Catenomycopsis*. Therefore, the isolate is being described as new species of *Catenomycopsis* named after its place of first occurrence Vinayaka.

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Conflict of Interest: The authors declare that there are no conflicts of interests.

REFERENCE

1. Pant P, Koranga A & Sati SC. 2019 Diversity and distribution of aquatic hyphomycetes in fresh water bodies of Nainital, Kumaun Himalaya, India. The International Journal of Plant Reproductive Biology 11(2):107-113
2. Pant P, Koranga A & Sati SC. 2019 Aquatic Hyphomycetes of Kumaun Himalaya: *Tricladium*. Phytotaxa 415 (1): 049-057
3. Sati, SC & Belwal, M. 2005 Aquatic Hyphomycetes as endophyte of riparian plant roots. Mycologia 97: 45-49.
4. Sati SC, Arya P & Belwal M. 2009 *Tetracladium nainitalense* sp. nov, a root endophyte from Kumaun Himalaya, India. Mycologia 101(5): 692–695.
5. Tibell L. 1984 A Reappraisal of the Taxonomy of Caliciales. Nova Hedwigia Beiheft 79: 597-713
6. Tibell L & Constantinescu O. 1991. *Catenomycopsis rosea* gen. et sp. nov (Hyphomycetes) anamorph of *Chaenothecopsis haematopus*. Mycol. Res. (5): 556-560.